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W. F. HARDY, M.D.

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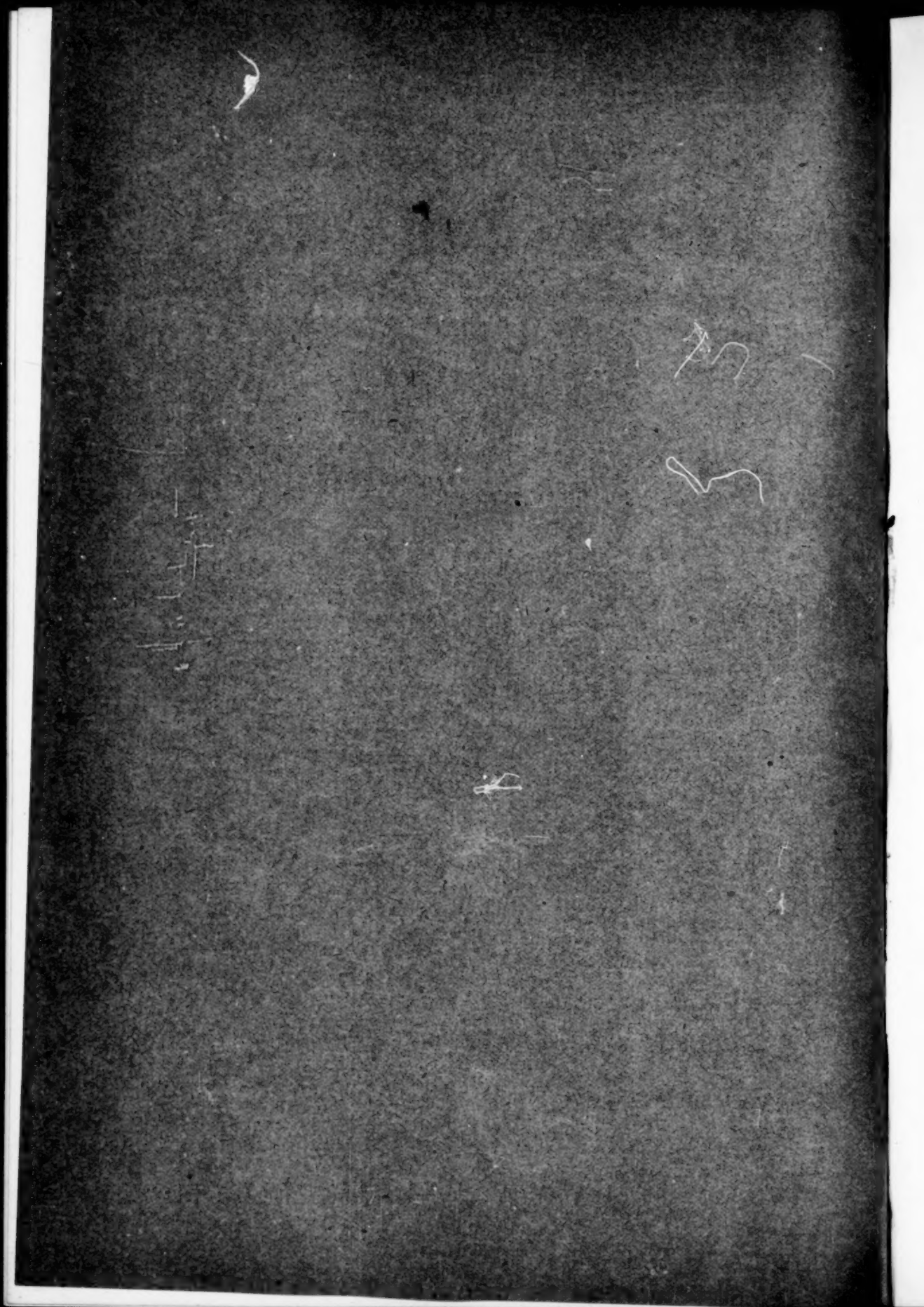
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ORIGINAL ARTICLES.

ESSENTIAL SHRINKING OF THE CONJUNCTIVA WITH A REPORT OF TWO CASES.

BY WM. F. HARDY, M.D., AND H. D. LAMB, M.D.,
ST. LOUIS, MO.

There need be no apology for reporting two cases of essential shrinking of the conjunctiva, inasmuch as the disease is exceedingly rare. It was stated by Marple that Hermann Knapp in his extensive experience saw but one case of this disease. It was our good fortune to have had the opportunity of observing two cases recently. Both were in boys, one eleven years of age, colored, and one seventeen years of age, white. According to Parsons one of the earliest cases of pemphigus, which is the forerunner of essential shrinking of the conjunctiva, was described by White Cooper in 1858. Before and since that time it has been confounded with xerosis. Xerosis conjunctivæ is but a symptom occurring in various conditions. Essential shrinking is one of these. Those cases of essential shrinking without a previous history of pemphigus seem to show the greatest chronicity. Those with an antecedent pemphigus may evidence a rapid shrinking and obliteration of the fornices, as in the cases of Conlon and Stieren. The dryness of the conjunctiva results from the occlusion of the lacrimal ducts. Pusey in his textbook speaks of pemphigus of the skin as a rare condition constituting one to two per mille of skin diseases. Pergens states that in Vienna in the service of Kaposi there was one pemphigus case to three hundred skin cases or one to twenty-eight hundred of all kinds of cases in the Allgemeines Krankenhaus.

The name pemphigus is applied to a group of conditions characterized by the spontaneous development of vesicles upon the skin and mucous membrane, usually in successive crops. A distinction is made between an acute and chronic pemphigus, the former is rare. Nothing definite is known regarding the cause of pemphigus. It is not contagious and heredity is not a factor. It has been observed after chilling. It has followed nervous disturbances as evidenced by pemphigus neuroticus and pemphigus hystericus. Similar eruptions have been frequently noted in connection with peripheral and central lesions of the nervous system. In acute pemphigus toxic disturbances appear to be a factor, and it seems to be clearly shown in a few cases to have been introduced by vaccination or to have come from animals. Stieren's second patient had been vaccinated four weeks previous to the development of a large bleb on the forearm. This was followed by others. The nose was also affected. A number of cases have been noted in butchers, and handlers of animal products, such as hides. Dartigalongue thinks the disease is due to an unknown nervous cause.

Bacteriologically there is nothing typically ætiological found. Bullock demonstrated in the fluid of unruptured bullæ in Pernet's and in Hardy's case a diplococcus larger than the gonococcus; a similar diplococcus was found by Demme and by Bleibtrau in their cases. Any part of the body may be affected and the eruptions may occur upon a mucous membrane. It is a matter of diagnostic importance to know that the disease may appear first upon a mucous membrane. It is in fact at times confined to the mucous membrane, especially of the mouth and nasal passages. In addition to the mouth lesions of pemphigus it occurs infrequently in the pharynx, larynx, nose, eyes, vagina, and presumably the stomach. In such instances adhesions between denuded surfaces are prone to occur, and in the nose have been known to produce complete occlusion. Various authors, among them Stelwagon, refer to the involvement of the mucous membrane of the eyes, mouth, nose, throat and larynx, some of these occurring simultaneously. Meneau gave an extensive review with bibliography of different forms of pemphigus involving the mucous membranes, especially of the conjunctiva, nose, mouth, throat and larynx. The occasional involvement of the buccal mucous membrane is well illustrated in Conlon's case. His patient was unable to open her mouth more than half way, owing to the cicatrization of her buccal mucous membrane. Conlon mentions Traut-

mann as having seen a patient whose mouth was completely closed for eighteen years from the same cause.

Steffan saw one case of pemphigus of the eye among 84,000 eye cases, Cohn one in 50,000, Schöler one in 50,000, Horner three in 70,000, Bäumlér seven in 97,000, Pergens two in 22,000, Franke five in 45,000; on an average one in 20,000 eye cases. Pergens collected 133 cases but excluded 21 either as doubtful or as repeated observations. He divided the cases into four groups: 1st, those with vesicles on the skin and finally on the mucous membrane; 2nd, cases without vesicles on the skin but with them on the mucous membrane; 3rd, cases in which vesicles were seen only on the eye. The connection here with pemphigus cannot be positively asserted, neither can it with certainty be excluded. 4th, those cases in which no vesicles whatever are found. These are instances of true essential shrinking. In regard to these Pergens thinks the associating of them with pemphigus is unassured, and for some entirely wrong. There were 16 such cases in his series. With some temerity we offer a somewhat different classification: 1st, those cases with skin lesions or blebs on mucous membranes other than those of the eye; 2nd, those associated with syphilitic pemphigus or syphilitic conjunctivitis; 3rd, those with no antecedent history of skin or mucous membrane involvement—essential shrinking.

In acute pemphigus severe conjunctivitis and swelling of the eyelids have been observed. Such cases are reported by Von Klemm, by Senator and by Seggel and Franke. The usual form of pemphigus is the chronic variety. The eye complications are usually put under this heading. By far the best description of pemphigus of the eye is given by Groenouw in Graefe-Saemisch. From it we have quoted liberally and to it we are much indebted.

The clinical picture is variable. The disease may be ushered in as a more or less severe conjunctivitis. Occasionally a croupous-like membrane is present, after the disappearance of which an ulcer may develop. On the other hand the conjunctiva may remain relatively intact. Subsequent to ulceration considerable scar formation occurs. The size of the vesicles on the eye varies from that of a pea to that of a bean. They may occur upon the palpebral conjunctiva, fornix or ocular conjunctiva. Their roof consists of only one layer of epithelial cells and is soon destroyed. Vesicle formation is observed according to Uthoff in about one-seventh of the cases. Morris and Roberts found them 12 times out of 28, Pergens 16 times out of 68 cases.

V. Michel states that the disease attacks by preference two places of the conjunctiva, viz., the region of the inner canthus and the lower half of the scleral conjunctiva. The further course of the disease proceeds regularly with scarring and shrinking. The first changes seem to appear constantly in the upper eyelids. There is a tendency to confuse the disease with trachoma. Pterygium-like formations are noted. The upper and lower lids may be joined directly to the corneal limbus. There may finally result distortion of the lids, trichiasis, entropion, and rarely ectropion, the latter the result of cicatrization and shrinking of the skin of the eyelid. Ankyloblepharon is observed especially at the inner commissure or canthus. Reich and Shöler found the same at the outer canthus. F. Schiller says that a slight or extensive ankyloblepharon at one or both angles is seen in every case of pemphigus and never in trachoma. Cohn noted a total ankyloblepharon. In this case the conjunctival sac was intact and a severance of the ankyloblepharon led to completely normal conditions.

According to the 56 eye pemphigus cases collected by Von Becker there was none or little shrinking of the conjunctiva present in 9.3 per cent., symblepharon in 19.4 per cent., complete cicatrization of the lids in 5.35 per cent. and a marked shrinking in 25.5 per cent. of the 56 cases. Both eyes are always affected but not necessarily at the same time. Several years may elapse before the second eye is involved. Von Michel demonstrated a case of one-sided shrinking of the conjunctiva with vesicles upon the palate and epiglottis. He concluded that the conjunctival shrinking was due to pemphigus.

The cornea becomes involved at varying times. According to Pergens in about one-seventh of all cases it remains quite intact. In far advanced cases the cornea is hazy, its surface dull and dry. Vesicles rarely form upon the cornea. These were observed by others, among them Täuffert, Schöler and Eales. Ulcers may develop upon the cornea without preceding vesicle formation.

The element of lues obtrudes itself in the discussion of the condition under consideration. Hesse in the *Wiener Klin. Woch.*, 1915, stated that in eleven cases of pemphigus vulgaris and dermatitis herpetiformis, 8 cases gave a positive Wassermann, of which all reacted strongly or medium positive. With the exception of one case all of these cases were shown to be from their history and clinically, non-syphilitic. From these

findings Hesse believed that it was proper to assume that the Wassermann reaction is characteristic for pemphigus. Ernest Nathan, on the other hand, found the Wassermann reaction without exception to be negative in twelve cases of pemphigus vulgaris and vegetans. Cases are reported in a number of instances and designated as syphilitic pemphigus of the conjunctiva. In such instances it would be of doubtful correctness to apply the term essential shrinking, though the end results may be identical clinically. Von Marenholtz thinks another form of pemphigus, namely pemphigus neonatorum syphiliticus, can lead to conjunctival pemphigus. His observations were made on an hereditary syphilitic child with essential shrinking of the conjunctiva. In Stieren's first case the patient was a syphilitic and had been taking enormous doses of K.I., in addition to bichloride of mercury. An interesting speculation in regard to Fehr's case was: "ought this syphilitic infection to be regarded as the direct cause of the severe pemphigus of the conjunctiva and the subsequent shrinking, or as an indirect cause only, by lowering the vitality of the tissues and undermining their resisting power?" Shumway thinks the question of syphilis in these cases is important to bear in mind. His case had a positive Wassermann and a perforation of the septum. Golowin in a marked case of pemphigus of the conjunctiva found a beginning atrophy of the optic nerve. This latter may have been of syphilitic origin. One of our cases was in a congenital syphilitic.

Fromaget and Lavie report a unique case. The symptoms were multiple anæsthesias, amblyopia, dryness of the eye, epiphora, blue œdema of the face, nystagmus and crisis of grand hysteria. Enormous bullæ occurred upon the palpebral conjunctiva and upon the eyelids.

The pathological anatomical findings vary. Borysickiewicz found croupous diphtheritic membranes upon the conjunctiva without preceding vesicle formation. Stattler noted an enormous swelling up of the connective tissue fibers and expansion and filling of the tissue spaces with fluid. Gelpke found failure of the epithelium and a massive exudate upon the thickened subconjunctival tissue. Sachsaler described a thickening of the epithelial layer of the conjunctiva. Uhthoff found besides inflammatory changes in the conjunctiva, a lifting up of the superficial layers of the epithelium, yet with no vesicle-formation of its own. Great stress is laid by most writers on the conjunctival shrinking following pemphigus. In reality this is not an essen-

tial shrinking but is according to Adam a cicatrization of the subepithelial and adenoid layer of the conjunctiva. From this it would appear that the term "essential shrinking" is a misnomer and that the appellation is more strictly applicable to the slow chronic process which characterizes the disease without antecedent pemphigus. Franke found among other changes a chronic inflammation of the subepithelial and adenoid tissue of the conjunctiva.

The prognosis is almost without exception exceedingly bad. Nearly every therapeutic agent from grafting to fibrolysin has been used with little or no success. Holmström observed four cases and thought that the arsenic treatment brought the trouble to a temporary standstill. In the hands of others the treatment with arsenic has been without avail. Bane reported a cure from the use of X-rays lasting two years when reported. Subsequently pemphigus developed in the other eye. Okuse after trying various unsuccessful measures, obtained success from the use of an oil derived from cooking dried neunaugen. E. and F. Landolt report the cure of a case of extensive pemphigus which had produced entropion and distichiasis of the lower lids. Pedicle flaps were used; a relapse occurred at the end of three years which was remedied by a pedicle flap introduced through a canthoplasty.

CASE REPORTS.

Both of the cases we wish to present suffered with their ocular trouble very early in life and came under our observation years after the disease had appeared.

Case 1.—S. J., now a young man 17 years of age, is a student in the Missouri School for the Blind in the service of Dr. J. W. Charles. His mother, a very intelligent person, gives the history of the boy having been vaccinated when 7 months old. Two months later, blisters containing pus and blood, and of about the size of the little finger-nail, appeared on the arms above the elbow, chest, abdomen and back. These the mother called chicken-pox, but said they had lasted for 2 or 3 months, "all of the summer". Baby was breast-fed at the time. Accompanied by fever the eye trouble started in both eyes while the eruptions were present on the body and arms. This began with a discharge in the eyes, which was followed by a dry greyish appearance of the eyeball.

The right eye has vision of 0. It presents an appearance of megalocornea due to a staphylomatous bulging at the limbus.

Above, the pigment shows through the stretched sclera and cornea, whereas below the cornea is densely opaque. The eyeball is almost fixed in position by the cicatricial bands, being able to move up and laterally incompletely, but not downward at all. There is almost complete obliteration of the upper and lower fornices and the eyelids in the outer fourth are joined together by cicatricial membranes. On looking upward the eyeball carries the lower eyelid with it. The eyeball is in position of divergence. Tension by the finger test is markedly plus in this eye.

The vision of the left eye is 3/96. The cornea in its lower third is opaque and there is also a small central opacity. The lower fornix is almost obliterated, although considerable upper fornix exists. Good rotation downward is possible, but movements of the eyeball in either direction are limited. The fixation of the eyelids when the eyeball is rotated throws the conjunctiva into pronounced bands. No distortion of the eyelid edges occurs although the line of the lashes deviates inwards. Anterior chamber deep; pupil reacts readily to light. Tension by finger test apparently normal. The conjunctiva and corneal epithelium of both eyes have the characteristic dry lusterless wrinkled appearance of essential conjunctival shrinking. Wassermann test of the blood made at the Washington University Medical School was negative.

Case 2.—O. P., a colored boy 11 years of age, first presented himself at the Washington University Eye Dispensary (service of Dr. Hardy) last August. Vision was light perception in either eye. The condition in each eye was very similar, so that both eyes can be described together. The cul-de-sacs below were quite shallow and at each outer canthus had disappeared. Corneae are opaquely greyish-white over their entire extent, and in the lower inner quadrants both corneae showed dense whitish areas of opacity. The conjunctivæ were dry, wrinkled and extended onto the corneae for several millimeters all around. Both upper eyelids were readily everted. The conjunctivæ over the tarsi are not found to be changed to the same extent as elsewhere, and particularly that of the left eye which looks fairly normal. All movements of the eyes are good.

The child is below par mentally. Wassermann test strongly positive. The mother states that when the boy was one year old an eruption like mosquito bites occurred on the scalp, legs and feet, in the fall and lasted about two months. Some hair was lost from the head as a result of this eruption. This eruption oc-

curring annually for six years, lasting through September and October. It was usually accompanied by marked itching and exacerbated by scratching. Eye trouble began when three years of age, in September, when the eruptions above mentioned were present. This began with watering and discharge in the eyes which lasted for about 1 year, when a doctor prescribed some powder, the mother says, which "dried up the secretion". At five years of age the child could see no more than he does now. The father is said to have worked around racing stables and handled horses during the early years of the child's life.

It has been our endeavor to collect the references to all of the literature bearing on this subject subsequent to Pergens' monograph in 1901, and the bibliography of Groenouw in Graefe-Saemisch in 1903. It is quite possible that some of the references escaped us. A further and more careful analysis would probably reveal the fact that a number of the cases reported as pemphigus or essential shrinking of the conjunctiva are incorrectly recorded. Furthermore, as Pergens found, it is quite probable that some of the cases were reported by more than one observer. No attempt was made by us to ascertain this because of the limited time at our disposal. It appears, however, that the recorded cases in late years have been disproportionately large in comparison with the earlier statistics. Yet the disproportion may be more apparent than real and the true ratio still be as before, one to twenty thousand of all eye cases.

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SOME REMARKS ON THE USE OF CALCIUM
CHLORIDE IN THE INTERNAL TREATMENT OF
GLAUCOMA.

BY ADOLF ALT, M.D.,
ST. LOUIS, MO.

Five years ago in the November number, 1912, of this Journal we printed a translation of an article by D. L. Weekers on the use of calcium salts in the internal treatment of glaucoma. It seems that neither Weekers' original article nor our translation has received much attention. At least I have hardly met with any articles referring to it. Yet, the employment of calcium chloride in glaucoma is, it seems to me, based on sound reasoning and the results of careful and scientific experiments.

Since this publication I have had occasion to employ calcium chloride internally in about a dozen appropriate cases, that is, cases in which for some definite reason an operative interference was not practicable, or cases in which the patient simply flatly refused to have any kind of an operation performed. Some of these cases were of the acute inflammatory form, and some of the chronic simple kind. After the ingestion of the calcium chloride almost every one of these patients showed within 24 hours a decided improvement in the glaucomatous symptoms. It was, especially, almost the rule that the severe pain in the inflammatory cases became much reduced or actually disappeared in 24 hours. The high intraocular pressure, also, was reduced. Of course, miotics were, also, used in all these cases, but in some a marked improvement started in with the exhibition of the calcium chloride. As Weekers pointed out, and this is self-evident, we

cannot very well say that the beneficial effect is due to the calcium chloride alone. Yet, it has in his, and now I may add in my experience, been marked enough to convince us that we think it should be used and be given a full trial in appropriate cases.

Weekers recommended to give three doses of 15 grams per day; I have a few times given considerably more than a dram a day, and have seemingly thereby increased the effect.

In chronic cases Weekers kept up the calcium treatment with interruptions. Some of my patients have taken it for months without interruption and without discomfort.

In one or two instances the patient complained of nausea and one even of a severe gastric disturbance, but we found that this was caused by other ingesta aside from the calcium, which does not seem to cause any disturbance, while, of course, its taste is not of the most pleasant.

In the last number of *La Clinique Ophtalmologique* received a few days ago (May 17) there is an abstract of a paper on the same subject by Alejandro Gowland (Buenos-Aires), who also speaks for the usefulness of calcium chloride in glaucoma. He employs it in a 2 per cent. solution of which he injects 2 cc. subcutaneously at a dose in the gluteal region. He states that: "such injections are painless; are followed by a slight rise in temperature; the intraocular tension is diminished; the pain disappears in from two to three hours. There are no gastric disturbances."

From my own experiences and those of Gowland, added to those of Weekers, this remedy is worthy in proper cases to be given a fair trial by the profession at large.

THE TREATMENT OF DISEASES OF THE IRIS AND
THE CILIARY BODY IN GENERAL.
IRIDOCYCLITIS AND IRIDOCBOROIDITIS.*

BY DR. A. DARIER.

(Concluded from last number.)

CHRONIC "QUIET IRITIS"; SEROUS IRITIS; UVEITIS.

We must not forget in the chronic forms of iridochoroiditis, with or without deposits on Descemet's membrane, posterior synechiae and opacities in the vitreous body with a slow evolution and very obscure ætiology, that we cannot procure a more or less relative cure by a strenuous treatment during 2, 3 or even 5 years; otherwise a more or less complete blindness is far more probable. In these cases we must vary the medications and treatments. Intravenous injections of mercury will form the fundament of their treatment, even if the Wassermann is negative, even if the tuberculin reaction is positive. A mercurial treatment must be tried, it will give a good result almost always, even if only temporarily. These injections must be made daily at first, then at the first sign of intolerance they are made every other day. After 30 or 40 injections have been made, the veins may be given a rest by making a series of subconjunctival mercurial injections with guaiacol, or injections of air into the anterior chamber. Then the patient is given a rest for 3 or 4 weeks, with hygienic measures; fresh air, exercise, massage, sweat cures, overfeeding, etc. At the end of 3 months we make a new series of intravenous mercurial injections if the first one has been successful; if not, we may try a series of ten injections of collargol 0.4 in 0.10 grammes every day, then one every other day. We may, also, make several series of pilocarpin injections. Finally another medication may render real service in case the preceding ones have not succeeded or exhausted their effect, that is iodide medication, but not potassium iodide, by injections of Lugol's solution or in iodated oil as iodipin, lipiodol every 2 or 3 days.

After 10 or 12 of these injections we return to mercury after a few days of rest. Sometimes arsenic is also helpful in cases of syphilis. Colloidal sulphur by intravenous injections is said to have given, also, good results in some cases of chronic iritis.

*La Clinique ophtalmologique, Jan., 1917.

We will soon see that many cases of tubercular iritis may be benefited by treatment with tuberculin combined with a proper hygienic treatment. Von Pirquet's reaction, especially when accompanied with an ocular reaction, may give some useful therapeutic indications.

Boardley (*Am. Ophth. Soc.*, 1915) remarks very judiciously that the tubercular, syphilitic or other intoxications may, besides the ocular affections, have caused an insufficiency of internal secretions (thyroid, hypophysis, mammary glands, ovaries), and that in these cases the specific treatment will be insufficient until we have given the patient thyroid extract, etc.

Wray is said to have in a number of cases of iritis obtained favorable results by a hydromineral treatment combined with acetozone, which is said to have properties analogous to those of peroxide of hydrogen, the antiseptic and powerful oxydizer. He gives four times a day 0.15 grammes of acetozone in a large glass of water and immediately after makes the patient walk 10 minutes. Dunn has had good results from giving twice daily 0.15 grammes of thyroid extract (*Lancet* 15).

INDICATIONS FOR SUBJUNCTIVAL INJECTIONS IN IRITIS.

In syphilitic iritis, when the general treatment and the mydriatics have already made the first attack against the morbid process and lessened its violence and have prepared the tissues for a local and more energetic intervention, subconjunctival injections of mercury cyanide can give brilliant results. After two weeks of general treatment and atropin instillations, if the pupil has kept its irregular shape due to posterior synechiæ, we may see the pupil dilate completely after one single injection of a cc. of a 1 in 1,000 solution of cyanide of mercury. Sometimes this needs several injections. A number of such experiences have already been reported by different authors. The eye must be in a receptive condition in order to produce this effect, the ciliary irritation must not be too violent; in the opposite case the subconjunctival injections are counterindicated. Then it is better to be satisfied with leeches, hot compresses, alcohol compresses or mercurial cataplasms and the general treatment until the congestion is reduced.

The most favorable cases for these local interventions are certainly the cases of so-called gummatous iritis, when we see at any point an oval swelling appear, yellowish, causing a difformity of the pupil without too much hyperæmia; in such cases quite

voluminous gummata have been seen to melt away in five or six days after two or three subconjunctival injections. The patient must be told that he must undergo a prolonged general treatment in order to avoid relapses which are as serious as the apparent cure was rapid. In a lady, 55 years old, affected by an old and grave syphilis and a violent iritis with condylomata and hæmorrhages in the iris, after ten days of mercurial periorbital injections and hyperdermic injections, the pupil remained indilatable by atropin even after repeated applications of leeches. One subconjunctival injection of mercury bichloride produced a lively reaction, and two days after the pupil was widely dilated, and the iritis was quickly cured. The following case shows once more how often syphilis is ignored and how remarkable is the antiglaucomatous action of subconjunctival injections of sodium iodide, and finally how powerful the action of subconjunctival injections of mercury. There was a Descemetitis not much accentuated, as yet without any alteration in the iris, in fact the pupil was still round and large without any deposits of uveal pigment on the anterior lens capsule. Suddenly violent inflammatory symptoms broke out, the pupil became oval and decentred, and it appeared as if a gumma of the ciliary body of the size of a large grain developed behind the iris at the level of the ciliary processes. All this was seen through a dim cornea, which was œdematous from a sudden increase of the intraocular tension. Dionin, then a subconjunctival injection of sodium iodide 1 in 1,000, two leeches at the temple, and three subconjunctival injections of salicylarsenate of mercury brought on a great improvement. The gumma melted day by day, and after five injections in twelve days the pupil was again round, the peripheral swelling in the iris was hardly visible, the cornea much clearer, tension normal, vision rapidly improving.

In this case the urgent general mercurial treatment was impossible on account of the bad conditions of the kidneys; without subconjunctival injections the eye would probably have remained badly damaged.

It is, however, not only in syphilitics that the resolving action of subconjunctival injections of mercury makes itself felt. In a case small granulomata of the iris disappeared so promptly under the influence of three or four injections that we concluded that what we had at first looked upon as tubercles was simply an abnormal form of syphilomata of the iris. A year later the patient died of tuberculosis. It is certain that a syphilitic can die

of tuberculosis; but we may admit, also, in the absence of more precise knowledge that the tuberculosis in this case had begun with slight granulomata in the iris.

But, gumma or tuberculosis, the action of the subconjunctival injections is no less manifest, and nothing could prove better the remarkable power of this local therapeutics.

Not all the forms of iritis and iridocyclitis improve in the same measure after subconjunctival mercurial injections. Aside from the cases which improve sometimes in an astonishing manner there are others in no way changed by this mode of treatment. There are even cases in which such an intervention may cause an acute attack, and others in which an injection causes such pains that the patient refuses any further medication of this kind.

We must, therefore, not always and in every case want absolutely to make subconjunctival injections, for most cases of acute iritis get well without them. This energetic intervention should be reserved for certain cases mentioned above.

In general the physician will find in subconjunctival injections a valuable adjuvant to the general therapy and even a substitute which will permit of a relative rest for the overdosed organism. Such alterations of local with general treatment can only be beneficial for a cure.

In certain most serious forms of iridochoroiditis with violent inflammatory exacerbations and elevated tension, in which an energetic intervention is urgent and cannot be deferred from fear of the gravest consequences, an iridectomy is not to be thought of. Then often the subconjunctival injections are of the greatest service, with the express understanding, however, that they are combined with paracentesis of the anterior chamber, bleeding and the proper general treatment.

This puncture empties the altered fluid of the anterior chamber and produces a salutary reduction of the whole circulation of the eye. A subconjunctival injection, even if abundant, will then be speedily absorbed and contribute powerfully to the renewal of the intraocular liquids. Truly remarkable results can be obtained by more or less often repeated combination of the evacuation of the aqueous humor with subconjunctival injections. In such cases it is best to employ solutions which are not too concentrated, according to the manner in which they are borne. In general it will be well to inject a syringe of a solution of cyanide of mercury 0.01 grammes, chloride of sodium 0.10 grammes in 50 grammes of distilled water.

In very grave cases the paracentesis should be made in ethyl chloride narcosis, which allows, also, of making a massive retrobulbar injection (2 cc.) of a solution of 0.01 grammes of cyanide of mercury, dionin 0.10 grammes, morphin 0.10, and 10 grammes of distilled water.

At once after the awakening apply three leeches or a good wet cupping to the temple, then an occlusive bandage, rest in bed and aspirin. The next morning all pain is gone. There is only a marked swelling, but the iritis is dissipated. Serum therapy by mouth will admirably complete the cure.

There are cases of iridochoroiditis with hypotonus, cases which often end in atrophy of the eyeball, in which subconjunctival injections have produced such a transformation that a more or less complete cure has been obtained when the eye had been considered as lost. In such cases it is difficult to say whether mercurial injections act really better than salt solution.

When we have to deal with plainly rheumatic cases of iritis subconjunctival injections of a 2 per cent. sodium salicylate solution given at the right moment render great service, in the same manner injections of guaiacol will have a really specific action in the tuberculous affection of the eye.

Subconjunctival injections of sterile air have also given good results, especially in the tuberculous forms. Injections into the anterior chamber in these forms will be spoken of later.

SURGICAL INTERVENTION IN IRITIS.

Chronic iritis and relapsing iritis end mostly, especially in older people, in the more or less complete loss of vision. In reality there may be produced a more or less marked dystrophy of the iris, then of the ciliary body, which by suppression of the secretion causes a softening of the eyeball, which may lead to complete phthisis, or this trophic disturbance may show itself in opacity of the crystalline lens, a complicated cataract, always unsafe to operate on. Subconjunctival 2 per cent. salt injections give sometimes a marked increase in intraocular tonus.

In other cases, on the contrary, each of the repeated attacks of iritis leaves some more or less thick posterior synechiæ behind it, finally the whole pupil is glued down to the lens, there is occlusion of the pupil or seclusion. In these cases atropine is useless and can only cause hypertonus. Therefore its use must be abandoned and miotics must be employed while waiting for the proper moment for an iridectomy.

Since the aqueous humor secreted by the ciliary processes cannot penetrate into the anterior chamber, it pushes the iris forward, gluing it to the cornea, producing what we call a "tomato" iris. This is followed by a glaucoma against which we must defend the eye by making as early an iridectomy as possible, which might have prevented these complications if it had been made after the second or third relapse of the iris.

Under these circumstances the operation is difficult.

In order to make a good iridectomy in these cases of seclusion of the pupil with total absence of an anterior chamber, the iris being in its whole area glued to the cornea, the corneal incision is difficult to make without injuring the iris. Many authors, therefore, do not hesitate to pierce freely in one cut iris and cornea in order to seize the iris afterwards from behind, pull it out and cut it off.

This procedure has the disadvantage to expose the crystalline lense to danger and to provoke hæmorrhages from the iris which are very disagreeable during the operation and may ruin the result.

The following is a method which may be used in these cases. With a lance-knife in each hand the cornea is penetrated at two opposite points about six or seven mm. apart. The point of each lance must penetrate into the anterior chamber and push the iris back, without cutting through it. Then both lances are withdrawn and with a fine straight knife with a button, passed through from one incision to the other, the corneal bridge is cut and separates. Thus the anterior chamber is widely opened without an injury to the iris and without a drop of blood being shed. The iridectomy can then be made with great facility and in the best possible condition for success.

This procedure may render signal success under many other circumstances. In certain cases of glaucoma, in some complicated cataracts, in some cases of corneal staphyloma, in short, every time when the abolishment of the anterior chamber renders the keratotomy difficult.

Isolated posterior synechiæ of the iris are sometimes ruptured by alternating injections of eserine, then atropine, adrenalin, dionin, but this must not be done before the inflammatory period is passed.

The surgical rupture of the synechiæ with a hook or forceps is not much to be recommended; it is better, when two or three

relapses of iritis have occurred with intervals of a few months, to make a broad iridectomy, which often prevents further attacks of iritis.

The iridectomy prevents relapses of iritis in 81 per cent. of the cases, it produces an improvement of vision in 63 per cent, the vision remaining the same in 28 per cent. and being diminished in 10 per cent. In iridochoroiditis with hypotonus the tension became normal in 70 per cent., vision was improved in 28 per cent., and remained stationary in 69 per cent. (Hallauer.)

CLINICAL REVIEW.*

KARL VON ZIEGLER.—How to practice the diminishing of myopia by exercising distant vision.—(Theory of Cohn.)

The supreme administrative tribunal has lately declared that cities cannot be forced to reserve large spaces for exercising in the fresh air. It is possible that this question will be solved by legislation, for the importance of walking in fresh air is undoubted. Moreover, the German hygienic Society has recommended that gymnastics in closed localities for nervous children be replaced by garden and field work. Every year about 9,000 recruits in the German army are held back on account of eye affections; the great majority of these are myopes belonging especially to the better classes of society.

Professor Hermann Cohn, of Breslau, has had the merit of having proven that if myopia, due to excessive work at close distances, is not exactly curable it can be arrested in its development by methodic exercises of the distant vision.

At once after the declaration of the war the military authorities have tried to perfect the military education of the younger classes. In these last times, to the corporal training exercises of distant vision, estimation of distances, utilization of the terrain, etc., have been added.

Ocular gymnastics become more and more necessary because adolescents get accustomed to limit their horizon to the school, workshop and desk, etc.

The author then speaks of his personal experience. During

*La Clinique Ophtalmologique, February, 1917.

the last part of his active service he received among 60 recruits 10 to 12 myopes wearing glasses. In the field glasses are a great inconvenience. The author began by having them removed. Since from the windows of the barracks there was an outlook over 800 m. of prairie, he profited of this condition in order to make the myopes exercise their vision. He had targets placed in the field, which grew gradually a little smaller, which the myopes had to find, and at the end of 6 months all of them recognized the least visible targets.

Moreover, they were exercised in diverse manœuvres during the march in order to maintain a straight or oblique direction, to follow parallel or perpendicular directions (2 sections manœuvring together), etc.

HENRI PIQUARD.—Metastatic ophthalmia.—(*Thèse de Lyon*, 1916.)

The author has collected 96 cases of panophthalmitis, among which are several of his own observations, from the service of Professor Rollet.

Metastatic panophthalmitis resulting from the propagation at a distance of a general or local infectious state, has been known for a long time. It may follow surgical, medical and obstetrical infections.

The panophthalmitis following surgical lesions (21 cases) is seen especially in septicæmia with purulent arthritis, pyelonephritis, erysipelas, panaritium, or wounds of the limbs. Then follow the affections concerning the organs of the digestive apparatus, then of the respirative apparatus.

Panophthalmitis following medical lesions (41 cases) is principally observed in pulmonary affections (pneumonia, bronchitis, bronchopneumonia) and influenza. The affections of the organs of the genito-urinary apparatus come then. Then those which concern the digestive tube. Eruptive fevers, most of the contagious diseases, typhoid conditions, the affections of nutrition in exceptional cases produce panophthalmitis.

Panophthalmitis following obstetrical lesions (33 cases), is seen in obstetrical septicæmia. We can state that most of the cases of medical panophthalmitis are seen in pneumonia and influenza, in which the pneumococcus is most frequently the cause. We must note also the comparative frequency of panophthalmitis in puerperal infection.

The symptoms of metastatic ophthalmia vary according to the

gravity of the original disease and the nature of the microbe which causes it. Still there is a symptomatology common to all the ophthalmias of whatever origin. We will recall it briefly.

Its beginning is more or less early, following close on a meningitis, varying in general between one and six weeks. In two individuals the eye symptoms came on two weeks after the beginning of an attack of the grippe; in one case with double panophthalmitis they came on later, and declared themselves only after a month and a half; and sometimes this first affection seems to have evolved completely, when the signs of panophthalmitis suddenly appear.

Clinically the first symptom is subjective; the patient loses his vision rapidly; this loss of vision is total in one or two days in the streptococcic forms, in three or four in the pneumococcic ones and with other germs. It is natural that the diminution of vision is the first thing to attract the attention, because the inflammation begins in the posterior part of the eye; retina and choroid being in close relationship the lesions of the one react upon the functions of the other, the integrity of which is necessary for good vision; we must, furthermore, not forget the frequency of hæmorrhages in the beginning, which can be seen at the examination.

Rapidly pains appear spontaneously and on pressure on the eyeball. They may be wanting in some cases, or, on the contrary, irradiate into the corresponding side of the face and head.

Little by little all parts of the eye are taken up and the eyeball is no more than an abscess. The clinical form, however, varies according to the individuals. Thus we can recognize three principal forms of metastatic panophthalmitis. Acute, subacute and torpid, without suppuration. The acute form is almost certain to lead to suppuration; the subacute purulent form in general may sometimes be characterized by inflammatory exudative lesions. The spontaneous perforation of the eyeball after suppuration is seen in 30 per cent. of the cases.

In 85 per cent. the lesion is unilateral with a slight predominance of the left eye. In 15 per cent. the lesion is bilateral.

Phlegmon of the orbit may call for a differential diagnosis, but this pushes the eye forward, which itself remains well; vision is intact, there is simply exophthalmus. In panophthalmitis the eye remains in its normal place, but itself is affected. "In purulent conjunctivitis, everything takes place in front of the eye; in phlegmone of the orbit everything takes place behind

the eye; in metastatic panophthalmitis the lesions are within the eye" (Poulard).

In fact we have to deal with a very grave affection, since there are 49 per cent. of deaths in obstetrical panophthalmitis and 33 per cent. in surgical panophthalmitis.

The visual prognosis is equally grave. Vision is definitely destroyed and enucleation has to be made in 29 per cent of the obstetrical, in 29 per cent. of the medical, and in 44 per cent. of the surgical cases.

The treatment, which is almost altogether surgical, is unfortunately of little value, because there is a primary infection which is often killing.

V. LIEBERMANN, JUN.—Technique of the localization by Roentgen rays of foreign bodies within the eye and orbit.—(*Deutsch. ophth. Wochen.*, 1915, No. 35.)

The author recommends Sweet's process in its new improved form several times. He gives, in short, his principles in referring for details to his previous communications in the *Arch. f. A.*, Vol. 76, and *Munch. Med. Wochenschr.*, 1915, No. 41.

The author considers it as a distinct advantage of Sweet's procedure that the Roentgen rays pass only through the lateral orbital wall and alone through the soft contents of the orbit which is to be examined. This makes them pass obliquely from in front backwards from the nasal side towards the posterior part of the temporal side through eye and orbit. From this results that a much softer tube must be used than when using a bitemporal and fronto-occipital direction of the rays. This relatively low hardness of the tubes permits a negative so sharp and free from secondary rays, that the smallest foreign bodies become visible. As a further advantage, since the degree of hardness of the tube remains always the same, the softness of these tubes permits of the use of much stronger doses and the exposition to the rays can be quickly done.

The procedures based on the principle are therefore of great advantage over the others, which, like them, have a geometric basis.

In Roentgen stereoscopy the practical advantage cannot be questioned on account of the complications presented by the apparatus, or the complicated measurements which must be taken in order to trace the plates and apply the rays. Finally it is not possible to take stereoscopic measurements. The illumination

through a screen has an advantage for orientation only when the foreign bodies are relatively voluminous (*Woch. f. Th. und H.*, July, 1916).

UHTHOFF.—Trachoma during the war. Experiences and considerations concerning ophthalmology in war.—(*Berl. Klin. Wochenschr.*, 1916.)

Among the conjunctival inflammations trachoma is found only in 5 per cent. of the cases, and mostly it is only an old cicatrized trachoma showing a relapse under the influence of the fatigue of the war. These patients had evidently suffered from trachoma before the war. The appearance of recent trachoma was observed only in isolated cases (2 of 9). One soldier had been attacked before entering the war (family trachoma), the other became affected at the front, but the affection was benign and the diagnosis was not without objection. Its progress was rapid, and its end favorable. The number of these cases of trachoma remained happily very much lower than it was feared because the soldiers fought in regions infected with trachoma (Russia, Galizia). These facts are important, especially when considering the history of former trachoma epidemics; we must remember particularly the enormous abundance of cases of trachoma observed in campaigns a hundred years ago, as well as the disastrous results reported in the terrible epidemics in Egypt in Napoleon's army at the end of the 18th century. It is true that at this epoch there was an association of bacilli (Koch-Weeks, gonococcus, etc.) predisposing particularly to a pernicious course on account of the climatic conditions and others (heat, dust, contamination through flies, etc.). It seems that the relative scarcity of trachoma in this war has struck other observers, also. Lately, Peters, of Rostock, has written to the author that he, too, had found a great scarcity of trachoma among soldiers returning from the front. In consequence the author feels justified in stating that in this war the trachoma contamination will not play an important rôle. The cause lies undoubtedly in the fact that the sanitary department takes such great care not to send anybody to the front who is suffering from trachoma, and that the contact between the soldiers and the infected populations has not been very intimate. Anyhow, the contagiousity of trachoma is undoubtedly much weaker than was feared. (*Wochensch. f. Th. und Hyg. d. Auges*, July, 1916.)

AXENFELD.—Hemianopsic disturbances of the visual field after shots affecting the skull.—(*Klin. Mtsbl. f. Aghlk.*, August, 1915.)

The 8 cases of the author are the continuation of a work by Uhthoff on the same subject. In half the cases there was double hemianopsia without paresis in other regions. In one case of inferior hemianopsia the tangential wound was found to the right, but had affected both visual centres. In 4 cases the lower half was influenced in a more pronounced but not exclusive manner. Evidently in persistent wounds of the visual centres the upper parts near the calcarine fissure are more exposed than the lower ones. The only case in which the upper half alone was affected was one of a wound immediately under the cortex with non-participation of the homonymous upper segments. There was a symmetry of the visual field. A case of bilateral hemianopsic scotoma presented a true asymmetry. In these cases we must search carefully if the shot in the occipital region is not complicated with alterations in the bulbus and optic nerve, in consequence of the destruction or contusions of another kind. In the cases of complete blindness seen at the beginning this always disappeared. In spite of this the author has reported several blind cases from the war as unable to work at their trade. In one case the executive vision did not suffice for any work; in another, in spite of perfect visual acuity, the lower segment is greatly affected. (Edema of the papilla (1 case) was not due to a cerebral abscess. The trauma itself which provoked the destruction of cerebral tissue and hæmorrhages caused, also, the optic neuritis. The presence of hallucinations in the defective half of the field in a case of bilateral hemianopsia after a tangential shot wound seems to demonstrate that even in cases of wounds in the immediate neighborhood of the cortex we must not conclude that these injuries are purely cortical or due to a complete destruction of the cortical walls at this place.

HEINE.—How does the cerebral (lumbar) pressure behave in affections of the optic nerve.—(*Munch. med. Wochenschr.*, 1916, No. 26).

Affections of the trunk of the optic nerve. Of 3 cases of axial retrobulbar neuritis of the optic nerve with central scotoma, two were due to syphilis, the third to multiple sclerosis. In these three cases the lumbar pressure was raised to a medium degree; the first two presented a temporary temporal anæmia, the other a temporary venous hyperæmia of the papilla.

Of 9 cases of unilateral partial (temporal) atrophy of the

optic nerves, 3 were due to syphilis, with a lumbar pressure of 235, 145, 180; two to multiple sclerosis with 165, 135; three with an uncertain diagnosis with a lumbar pressure of 200, 140, 170.

In 20 cases of bilateral partial (temporal) atrophy of the optic nerves there was present a multiple sclerosis in 8. Eleven lumbar punctures gave only in three cases no rise of pressure whatever, twice a feeble one, and six times a medium one.

In three other cases there was syphilis, tabes and paralysis with a feeble, marked and medium increase in lumbar pressure.

In two cases of intoxication amblyopia an alcoholic had a strong increase, a smoker a light one.

In 7 cases with unknown ætiology the lumbar pressure was twice normal, twice slightly, three times medium, and nine times strongly increased. In two cases of syphilitic unilateral total atrophy of the optic nerve the lumbar pressure was feeble.

In 29 cases of total bilateral atrophy there was syphilis 10 times, tabes 7 times, arteriosclerosis once, 7 times a doubtful cause, 4 times yellow atrophy.

In the 10 cases of total bilateral atrophy 18 lumbar punctures gave the pressure once not raised, 7 times feebly, 3 times medium and 6 times high.

In the 7 cases of bilateral total atrophy of the optic nerve, due to tabes, 10 punctures gave the pressure 5 times not increased, twice feeble, and 3 times medium.

The author thinks that elevated pressures speak in every case for syphilis cerebro-spinalis, the more feeble ones for tabes or paralysis,

The one case of total double arteriosclerosis of the optic nerve showed no increased pressure.

In the four cases of yellow atrophy there was twice a typical pigment degeneration of the retina with a feeble and a negative pressure; the third case with a minimum pressure showed no pigmentation, but floating opacities in the vitreous body. The fourth case is atypical because of the marked difference of pigmentation in the two eyes. A positive Wassermann reaction speaks for a syphilitic ætiology. The pressure shows a medium increase.

It is well known that it is not easy to make a differential diagnosis between the typical pigment degeneration of the retina and syphilitic chorioretinitis, which resembles it more or less. The author thinks that in these cases the lumbar pressure might aid the diagnosis. (*Woch. f. Ther. und Hyg.*, 1916, No. 43.)

MANDELBAUM.—New observations concerning the comple-

ments and their significance.—(*Muench. med. Wochenschr.*, 1916.)

The author reports on researches on the richness of the blood in complements. The observations have brought him to formulate the following general laws, about the conservation or disappearance of the complements outside of the blood current.

The complement contents are the same in all human sera. The quantity of complements in the blood of a healthy man remains invariable outside of the blood current, if the specimen is kept in an ice box, for several days. A series of pathologic sera in 24 hours, at the temperature of an ice box, loses its activity almost altogether, when the serum alone or the total quantity of blood is exposed to this temperature. The serum alone conserved at 37 degrees for one night loses the greater part of its activity; if at the same time the blood clot is conserved over night at 37 degrees the complement action is preserved. The socins preserve the complement at 37 degrees; they come in all probability from leukocytes or the hæmatoblasts.

The height of their production takes place at about 37 degrees, in the temperature of the ice box they do not form. Other studies which the author describes have shown that these phenomena can give practical indications for the diagnosis. It has been found that the diminution of the complement in a short space of time at ice box temperature manifests itself only in very characteristic affections (especially syphilis, tuberculosis, convalescence from scarlet fever).

The examination of about 5,000 sera has permitted the author to learn the following:

It is indispensable when examining sera to use, aside from the hitherto known methods, the one which the author describes. A positive result with this latter proves the probable presence of a specific infection of old date, even congenital; on condition that we can eliminate in this case a chronic tuberculosis, chronic suppurations, convalescence from scarlet fever. The author believes even that in these cases with a positive reaction if every other medication has failed, an antisyphilitic cure is indicated.—(*Wochenschr. f. Ther. und Hyg.*, August, 1916.)

KOELLNER. — Intraocular pressure.—(Physio-med. Society, Wuerzburg, February, 1916.)

The author spoke at this meeting of the daily variation of the intraocular pressure and their clinical importance. (*Muench. Med. Wochenschr.*, 1916, 10.)

In almost all glaucomatous eyes and in the majority of glauco-

matous eyes the tonometric examination shows regular variations of the daily pressure. In normal eyes these variations attain only several mm.; in glaucomatous ones 20 mm. and more. The difference in pressure does not increase simply with the rise of the intraocular pressure; the pressure increased in the morning, keeps on rising till 10 o'clock or noon, to fall again and reach the minimum at about 7 o'clock in the evening. The curves of the pressure in both eyes agree to a remarkable extent; the movements of the pupil play no ætiologic rôle.

It is probable that the principal cause for the phenomenon must be sought in the variable degree of fulness of the ocular bloodvessels, depending on the general distribution of the blood in the organism. The author recommends the making of curves of the pressure in all cases of glaucoma, to measure at 10 o'clock in the morning and between 4 and 6 o'clock in the evening. Since the conditions of pressure are the most unfavorable in the morning it will be of value in a good many cases to perform the operations for glaucoma with preference in the afternoon. (*Woch. f. Ther. und Hyg.*, April, 1916.)

HANSEN.—Gumma of the choroid.—(*Klin. Mtsbl. f. Aghlk.*, January 16.)

A patient, 17 years of age, presents the following symptoms: O.D.=1; O.S. counts fingers at 1 m. Big central scotoma; the eye is sensitive, media clear. Underneath the macula a gray whitish focus of the size of the papilla. General condition: slight chlorosis, Wassermann positive, maternal syphilis. At first conservative treatment. Injections of tuberculin without reaction. Specific treatment of mercury, iodide, salvarsan. No success. Hæmorrhages in the neighborhood of the focus. The latter gradually attains double its former size. Abderhalden once positive, once doubtful. Roentgen irradiation useless. Enucleation 3 months after entrance into the hospital for fear of a malignant tumor.

With the microscope a granulomatous inflammatory tumor is seen, transformed in its middle into sclerosed tissue. Changes in the bloodvessels characteristic for syphilis. It was undoubtedly a gumma in transformation into dense connective tissue, starting from the choroid as is usually the case, as the literature shows.

As characteristic changes in this case are noted the repeated hæmorrhages in the retina, the slow course and the absence of inflammatory phenomena. (*Woch. f. Ther. und Hyg.*, 1916.)

ABSTRACTS FROM MEDICAL LITERATURE.

By W. F. HARDY, M.D.,

ST. LOUIS, MO.

DISTURBANCES OF VISION FROM QUININE AND PALUDISM.

In recent years neurorecedives of syphilis are attributed by some authors to salvarsan, and it is intelligible that a bactericidal remedy, by setting free endotoxins, can appear to modify the disease by a composite reaction. The association of cinchonism with malaria in the same subject is of the same character, and in the case of certain phenomena it seems impossible to state whether these are due to the disease or the drug, or to some interaction between the two. In the *Crónica Medico-Quirurgica* for April, Dr. Santos Fernandez writes at length on the power of both quinine and malaria to influence vision. He notes, especially, cases of sudden blindness following the exhibition of quinine for several malarial attacks. The anatomical basis is apparently total ischæmia of the papilla, followed by atrophy of the opticus. In such cases the drug is naturally accused, but it is, of course, not impossible that the disease was an active factor. Does quinine ever set up this ischæmia in the sound subject, does its action on the plasmodium react unfavorably on the organism? A case is mentioned in which ocular disturbance followed the use of quinine in a child with diphtheria, who later received serum. The sight cleared up, but many years afterward, when the patient sought glasses, it was learned that the failure of vision was due to an affection of the papilla. It is highly important to ascertain the special affections of the eye which result from paludism alone and from quinine alone. We cannot depend too much on old accounts of eye disorders due to malaria which could have been caused by the drug. These have been chiefly neuralgia of the trifacial, iritis, optic neuritis, and hæmorrhage of the retina. Quinine, without reference to any particular therapeutic use, is commonly accused of causing "amblyopia and amaurosis", which names suggest functional disturbances of temporary duration. For some years these diagnoses have seldom been recorded in Cuba, save in non-resident Mexicans. This appears to be due largely to the results of antimalarial

measures and the disappearance of severe forms of malarial infection. It is conceded, however, that it is not so much heavy dosage as idiosyncrasy which is responsible for quinine amblyopia, etc. In the old days in Cuba, when at the slightest touch of headache, very large doses were repeatedly ingested, serious visual disorders were not much in evidence. The author recalls one case operated on for cataract in which vision did not return, and an atrophy of the papilla was found, which may have been purely senile. The entire question remains unsettled because of lack of autopsy material and because we are influenced necessarily by results of experimental work on animals, which appear to show that quinine is surely neurotropic to the optic nerve if the dose is large enough.—Editorial, *Medical Record*, June 23, 1917.

ESSENTIAL SHRINKING OF THE CONJUNCTIVA OCCURRING IN ACUTE AND CHRONIC PEMPHIGUS.

In the *Boston Medical and Surgical Journal* of August 16, 1917, appears an illuminating review of this condition by Frank A. Canlan, with a report of two cases.

Essential shrinking of the conjunctiva is simply a descriptive name of the end-result of pemphigus of the conjunctiva. This identification was propounded by Von Graefe in 1879, the author tells us.

It is a very rare disease and occurs with equal frequency in both sexes and at all ages.

In the majority of cases there is no predisposing condition or cause, yet in a few septic wound or vaccination has been given as its origin. A specific organism—a diplococcus has been found in the bullæ by several writers. These cocci are not present in the sac after cicatrization is complete, and do not cause shrinking when placed in the conjunctival sac of animals.

By some the condition is regarded as due to the action of toxins upon the nerve centers, resembling herpes in this respect.

Of the pathology Adam says, "The essential process of pemphigus of the eye is not the formation of bullæ with consequent healing, but is an inflammation of the sub-epithelial and adenoid layer of the conjunctiva going over into cicatrization. The shrinking of the conjunctival sac is not due to a sticking and growing together of the conjunctiva, but to a cicatrization of each spot of inflammation. The result is a formation of vertical

folds which appear like adhesions. He found in his corneal section that the process consisted of a denudation of epithelium, followed by an irregular regeneration of exuberant granulation. Von Morenholtz found the cornea covered by epithelium from the lids.

In regard to treatment the author says, "Up to date we are helpless and unable in the slightest degree to influence the progress of the disease." As therapeutic measures there have been tried Thiersch grafts, X-ray and radium, vaccine, fibrolysin and arsenic.

Pemphigus of the conjunctiva may result in blindness in four to six weeks, or a patient may suffer from the disease twenty or thirty years without corneal involvement and its consequent loss of vision.

Both of the cases the author reports were women fifty years of age. In the first case pemphigus lesions in the mouth preceded the eye involvement by a few months; and then simultaneous with the eye lesions appeared large bullæ all over her body. This case was notable because an undoubted shrinking of the conjunctival sac developed in one month.

In case two, also, there was a history of "blisters" in the mouth preceding the eye involvement. Of this patient the author gives a clear and detailed description of the progress of the disease in the eye, which proceeded to an extreme point, to where she could open her eyes but two or three millimeters. The cornea of the left eye was obscured by a dirty white exudate or membrane, which could be removed with difficulty, showing a diffuse infiltrate of the cornea proper covered with dull, dry, xerotic epithelium. The mouth involvement proceeded to where the patient was not able to open her mouth but half way, owing to the cicatrization of the buccal mucous membrane.

THE EFFECT ON PAPILLŒDEMA OF REMOVAL OF SMALL QUANTITIES OF CEREBROSPINAL FLUID BY LUMBAR PUNCTURE.

To perform lumbar puncture in a case of brain tumor has been generally held to be a dangerous and unjustifiable procedure. Where a tumor is known to exist or is strongly suspected, it had best be deferred or abandoned. There are cases, however, in which a papilloedema is present and tumor is in all probability not present. It is to this class of cases that Spiller and De

Schweinitz (*The Jour. of Nervous and Mental Disease*, July, 1917) refer. Three cases were observed by these authorities in which removal of a few cubic centimeters of cerebrospinal fluid had a remarkable effect on swelling of the optic nerves. The case histories are given in detail. The danger from lumbar puncture in brain tumor is an imminent one and deaths have been recorded. Especially is this true of subtentorial tumor. Danger may be minimized by withdrawing but small quantities of fluid at any one operation. However, when the increased intracranial tension is the result of some cause, such as meningitis, the prohibition against puncture is not so strong. The authors state that in general terms it may be concluded that lumbar puncture is not justifiable, except in rare instances, where there is a definite recognition that the increased intracranial pressure is due to cerebral or cerebellar tumor. But in meningitis, apparently in encephalitis and in some forms of optic neuritis dependent upon a toxæmia, for example, the influenzal types of optic neuritis, and perhaps in disc œdema dependent upon fracture of the skull, it is a procedure worth careful consideration. Where there is a doubt as to the possible existence of tumor it would seem from the first two cases described in the paper, that small quantities of cerebrospinal fluid may be removed by lumbar puncture with little danger and with most beneficial results.

SERUM THERAPY AS APPLIED TO PNEUMOCOCCIC INFECTIONS OF THE EYE.

Dr. Louis Lehrfeld tells us in *The New York Medical Journal*, August 4, 1917, that the announcement by the Rockefeller Institute that the pneumococcus is no longer a single organism but a family of cocci composed of four different species, has paved the way for extensive research along the lines of serum therapy for each type of micro-organism.

In the experience of those who have used antipneumococcus serum in the treatment of pneumonia, only the serum of the type I variety has given conclusive and encouraging results.

If serum therapy can be of value in the treatment of an acute pulmonary disease, such as lobar pneumonia, there is every reason to believe that the same treatment could be applied with advantage in the acute inflammatory diseases of the eye caused by

the pneumonia germs. Since there are, as a rule, but few organisms obtainable in an eye infection, and the growing of cultures and inoculating of the mouse consumes considerable time, it seems best not to await the determination of the type of infection in a case, but to use mixtures of equal quantities of stock serums in order to reach the prevalent type. The Pneumonia Commission has therefore prepared ampules of serum of type I and II in equal quantities for use in eye cases. This mixed treatment can be continued until the type has been diagnosed by the proper laboratory tests, when the specific serum can be administered.

The rationality of antipneumococcus serum in the eye is based solely on the properties of the various serums to agglutinate the organisms of their respective types.

Local instillation in the cul de sacs of the infected eye can only be relied upon in the superficial infections of the globe, whereas, when the deeper structures are involved, it is advisable to use the serum intravenously, as in the case of labor pneumonia.

The advantages to be derived from local serum therapy in the severe pneumococcic infections over the present methods of treatment are the immediate destruction of the invading organisms and the preservation of the eye-sight. Its use at the Wills Eye Hospital has been very encouraging, but its true value can only be determined after many trials have been made.

EDITORIAL NOTICE.

The Editor of this Journal wishes to announce to its readers that he has, after some deliberation, decided to join the merger of American Ophthalmic Journals. He may have to say a few words about this and the Journal at some later date. At present he wants to notify its readers that his now almost 34 years old *American Journal of Ophthalmology* will cease to exist with the December number of the current year.

ADOLF ALT.